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A new species of a gelechioid genus, *Idioglossa* Walsingham (Lepidoptera, Batrachedridae, Batrachedrinae), from Japan

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Abstract A new gelechioid species, *Idioglossa polliacola* Sugisima, is described from Japan, with a series of figures and photos. Biology of the new species is also described on the basis of observation by the authors, with a series of photos. One of the most impressive features on its biology is the characteristic and complex larval nest constructed on the leaf of the food-plant, commelinaceous *Pollia japonica*, and remarks are made concerning the adaptive significance of the larval nest. The genus *Idioglossa* has been assigned to Oecophoridae in the last two decades, but the genus is most likely to belong to a batrachedrid subfamily Batrachedrinae in the latest taxonomic system. The genus and family are new to Japan.

Key words *Idioglossa polliacola* sp. nov., *Pollia japonica*, Batrachedridae, biology, larval nest, Japan.

The genus *Idioglossa* Walsingham, 1881 is composed of beautiful gelechioid moths. The members of the genus are quite easily distinguishable from all other micro-moths by the linear hindwings with metallic transverse fasciae, by the male antennae with a sub-conical projection below near the base, and particularly by the proboscis basally with a conspicuous tuft of extremely long scales (Walsingham, 1881; Forbes, 1923; Turner, 1941). There have been six named species in the genus: *Idioglossa bigemma* Walsingham, 1881 and *I. triumphalis* Meyrick, 1918 are known from southern Africa, *I. triacma* Meyrick, 1913 and *I. argodora* Meyrick, 1913 from India, *I. metallochrysa* Turner, 1917 from northeastern Australia and Java, and *I. miraculosa* (Frey & Boll, 1878) from eastern regions of North America. Concerning biology, Frey & Boll (1878) and Forbes (1923) described the immature stages of *I. miraculosa*, which feeds on poaceous *Panicum clandestinum* in North America. Fletcher (1920) described the biology of *I. triacma* feeding on commelinaceous *Commelina benghalensis* in India, with a series of detailed illustrations. Meyrick (1936) very briefly mentioned that *I. metallochrysa* fed on zingiberaceous *Costus speciosus* in Java. In the past, after the extremely comprehensive micro-lepidopterous family Tineidae *sensu lato* fell out of use, *Idioglossa* has been referred to various families. Many authors lumped *Idioglossa* with *Heliodines* Stainton in the family Heliodinidae (or an elachistid subfamily Heliodininae), which was at that time a miscellany of heterogeneous showy micro-moths and contained *Stathmopoda* Herrich-Schäffer and some other showy gelechioid genera as well (Meyrick, 1913; Turner, 1917, 1941; Forbes, 1923). Some authors assigned *Idioglossa* to the family Epermeniidae, to which *Stathmopoda* and allied genera have never been assigned (Meyrick, 1918; Fletcher, 1920; Braun, 1924). Current limits of the microlepidopterous superfamilies were generally accepted in the late 1960's. Gaedike (1968) is apparently the first author who showed *Idioglossa* belonging to Gelechioidea instead of belonging to Yponomeutoidea such as Heliodinidae or Epermeniidae, although he did not specify the family placement of the

genus. Hodges (1983) listed *Idioglossa* in the tribe Oecophorini (Oecophorinae, Oecophoridae), where he included *Stathmopoda* and allied genera as well. Common (1996) also listed *Idioglossa* in Oecophoridae, while he lumped the genus with *Stathmopoda* and its relatives as the subfamily Stathmopodinae. Very recently, Hodges (1999) revised the taxonomic system within Gelechioidea drastically, and gave a key to families and subfamilies of his novel system. He did not specify the family placement of *Idioglossa*, but according to his key, the genus is most likely to belong to a batrachedrid subfamily Batrachedrinae, on the basis of the structures of pupal abdomen, wing-venation, positions of spine-like scales on adult abdominal tergites, and structures of male genitalia.

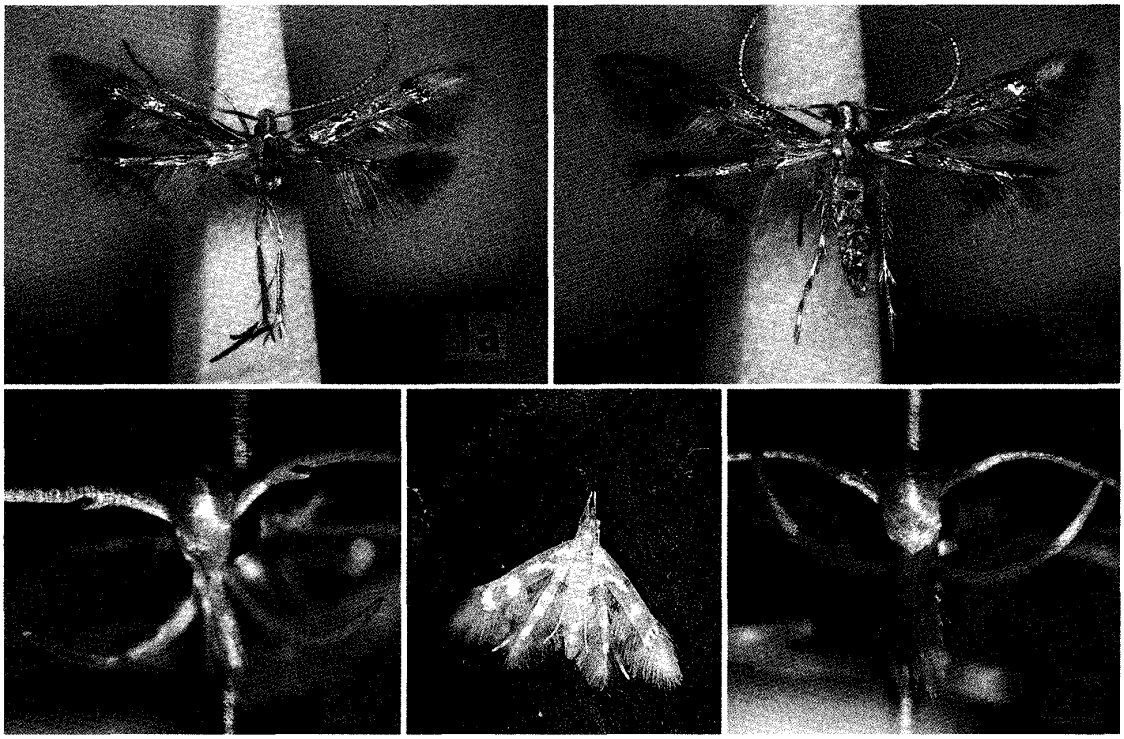
In the late 1960's, Arita found micro-caterpillars making characteristic and complex nests on the leaves of commelinaceous *Pollia japonica* in Kurama-yama, Kyoto, Japan. In each nest, a single larva fed on the leaf from the underside, hiding under a silk-sheet, and leaving only the upper epidermis uneaten. After rearing the larvae to adults, he got micro-moths, which have a conspicuous tuft of extremely long scales on the basal part of the proboscis and rest with their distinctly patterned hindwings exposed. He easily found them to belong to a species of the superfamily Gelechioidea on the basis of the scaled proboscis and the very long recurved labial palpi. However, the proper taxonomic position of the species within the superfamily remained uncertain, because it seemed to be distant from all gelechioid taxa known in Japan at that time. In the late 1980's, he had a second opportunity to meet this gelechioid species: he was asked to identify this species by Mr M. Nakamura in Sizuoka Pref., who also reared the adult moths of the species from larvae feeding on *P. japonica*. But he again gave up identification for the same reason. In July of 1998, in the course of biological investigations of the Imperial Palace of Japan, which were conducted by the Natural Science Museum, he again found quantities of larvae of the uncertain gelechioid species feeding on *P. japonica*, which was the third opportunity for him to meet the species. In order to request identification of the species, he sent the adult specimens to Dr T. Ueda, who specialised in taxonomy of Gelechiidae at Entomological Laboratory of Osaka Prefecture University and knew that Sugisima was investigating some gelechioid species extremely similar to Arita's one. Independently of these episodes, Sugisima was engaged in research on the gelechioid moths congeneric with Arita's mysterious species. In 1994, he chanced to find a few specimens of such moths in the collection of Systematic Entomology Laboratory of Hokkaido University, and was greatly interested in their unusual appearance and uncertain taxonomic positions. Among those specimens, a female was reared from larva feeding on *Carex* in Japan, and in fact, it belongs to a species different from Arita's one. In 1996, he collected additional samples of the species in several localities in Japan, and moreover, in 1998, he reared the adult moths of another congeneric species from micro-caterpillars feeding on *Commelina* in Kuranda near Cairns of Queensland, Australia. In late May of 1998, he came to know that his gelechioid moths belong to the genus *Idioglossa* Walsingham, 1881 through the good advice of Dr Ian F. B. Common in Toowoomba of Queensland, Australia. Sugisima and Arita were adquainted with each other by the good offices of Dr Ueda, and cooperated in observing the biology of the *Idioglossa*-species feeding on *Pollia japonica*. Sugisima concluded the species to be unnamed.

In this paper, *I. polliacola* sp. nov. is described by Sugisima with a series of photos and figures, and its biological information is described by Sugisima and Arita with a series of photos and figures. Remarks are made concerning the adaptive significance of the characteristic and complex larval nest. The genus *Idioglossa* and the family Batrachedridae are added to the Japanese fauna.

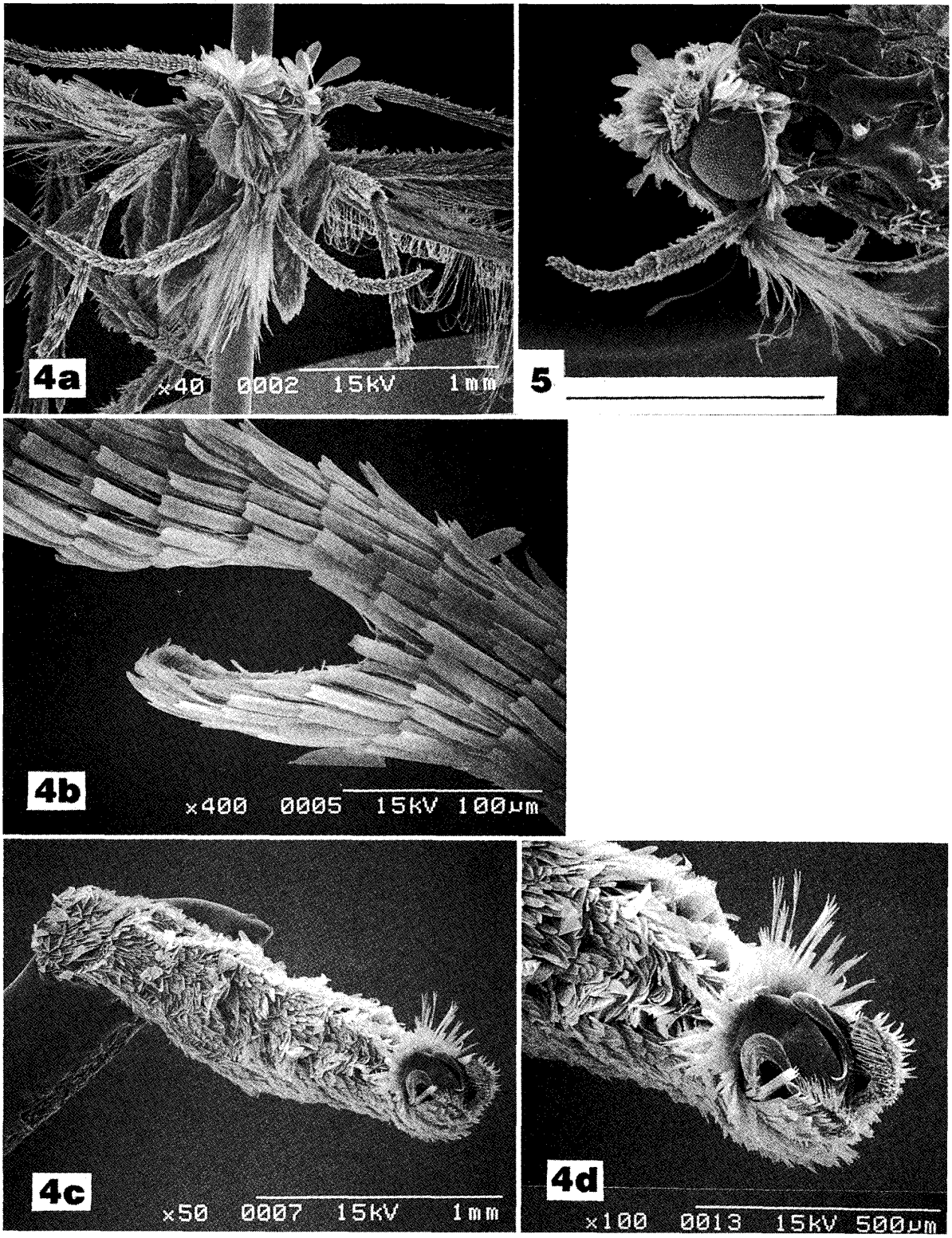
Specimens examined herein are deposited in the following collections (abbreviated in the text): Department of Zoology, National Science Museum, Tokyo, Japan (NSMT); Systematic Entomology, Hokkaido University, Sapporo, Japan (SEHU); Entomological Laboratory, Osaka Prefecture University, Sakai, Osaka, Japan (OPU); The Natural History Museum, London, England (BMNH); Australian National Insect Collection, Canberra, Australia (ANIC).

Idioglossa polliacola Sugisima, **sp. nov.** (Figs 1–25)

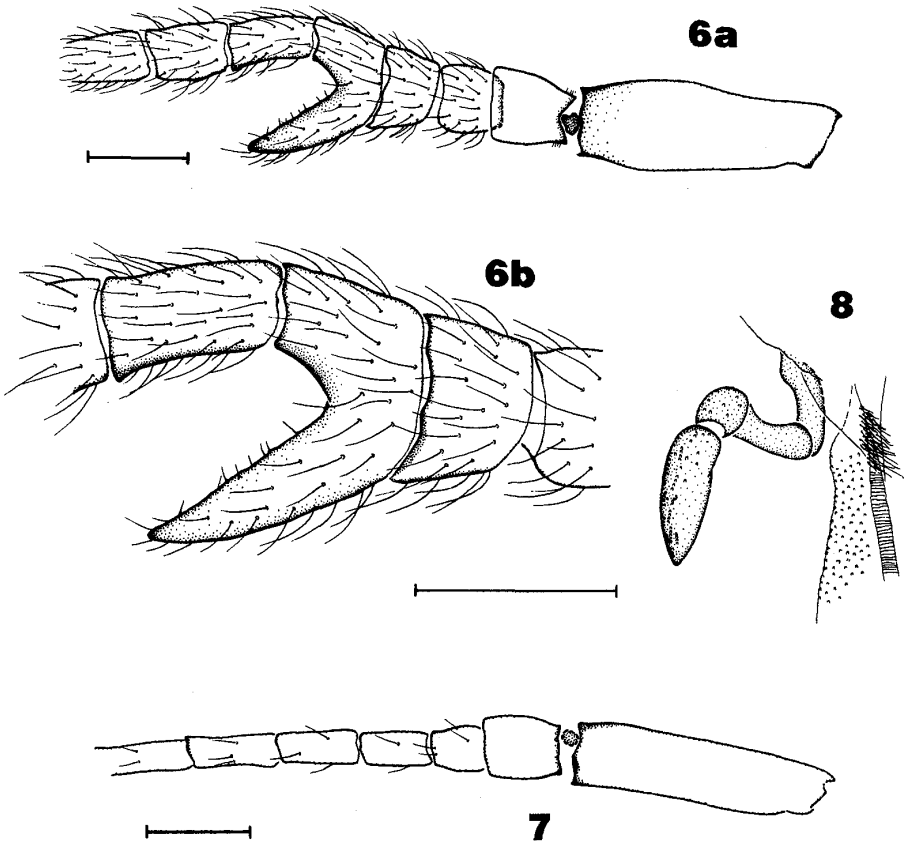
Diagnosis. This new species is, without doubt, referable to the genus *Idioglossa* on the basis of the linear hindwings with metallic transverse fasciae, the male antennae with a sub-conical projection below near the base, and particularly the proboscis basally with a conspicuous tuft of extremely long scales. Its wing-coloration and size are usual for the genus. The head and thorax are glossy ivory, with some chrome-yellowish parts. The abdomen is chrome-yellowish, glossy ivory along segmental margins, subapically with a brownish transverse band, which is often indistinct in the male. The chrome-yellowish forewing has four metallic greyish markings: a longitudinal streak extends along the wing-axis from the base to basal 1/5; a darker-coloured fascia on basal 1/3 is bent outwards and rarely reaches the wing-margins; the other darker-coloured fascia occurring beyond basal 3/4 is almost straight and traverses outwards obliquely throughout the wing; a patch varying in size and shape occurs midway between the two darker fasciae, without reaching the costal margin. The chrome-yellowish hindwing has four metallic greyish transverse fasciae on basal 1/4, before basal 2/5, beyond basal 3/5, and beyond basal 4/5; these fasciae are darker-margined and reach both



Figs 1–3. Adult moths of *Idioglossa polliacola* Sugisima, sp. nov. 1. ♂, holotype (a: the whole insect, b: head in frontal view). 2. ♀, paratype from Fukiage-gyoen, Tokyo (a: the whole insect, b: head in frontal view). 3. Resting posture, ♀, reared from larva collected in Sanaru-ko, Hamamatu City (00333).



Figs 4–5. Adult males of *Idioglossa polliacola* Sugisima, sp. nov.; SEM-observation of paratypes from Fukiage-gyoen, Tokyo. 4a. Head in frontal view. 4b. Subconical projection arising from a basal part of antenna. 4c. Abdomen in dorso-lateral view. 4d. Genitalia in dorso-caudal view. 5. Head in lateral view. Scale bar: 1 mm.

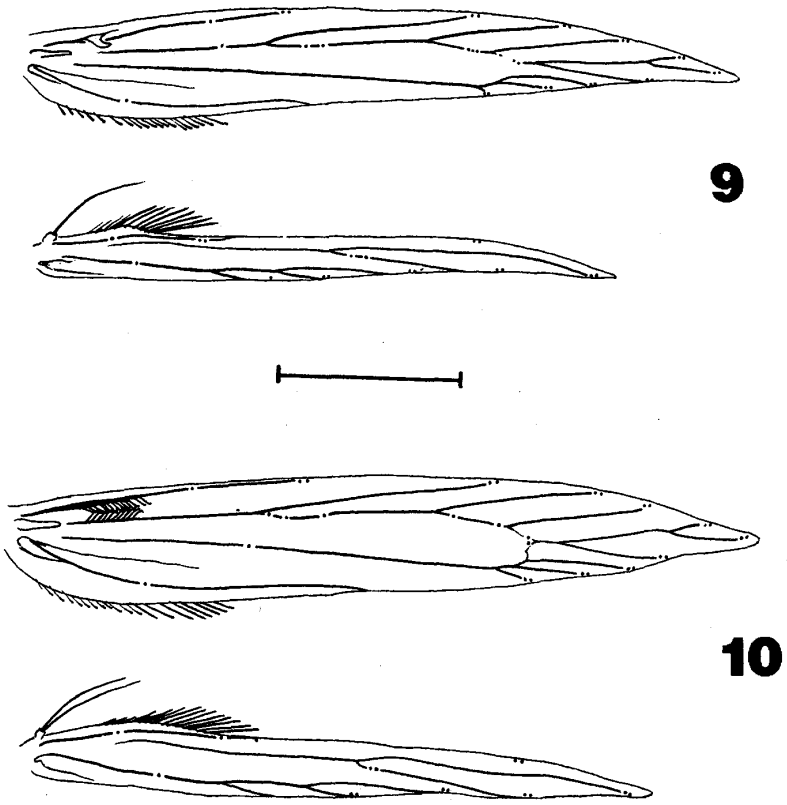


Figs 6–8. Appendages of the head of *Idioglossa polliacola* Sugisima, sp. nov., paratypes from Fukiage-gyoen, Tokyo. Scale bars 0.1 mm. 6. Male antenna (slide no. 0437) (a: basal segments, b: magnified view of the subconical projection). 7. Basal segments of female antenna (slide no. 0438). 8. The basal part of the proboscis and the maxillary palpus; sockets indicating the area, from which extremely long scales arise (slide no. 0435).

margins of the wing; the wing is considerably lighter-coloured from the base to the first metallic fascia and more or less between the second and third metallic fasciae. As to the male genitalia, the most striking character is the valva with a sickle-blade-shaped projection, which arises from the base of the dorsal margin, extends curving strongly, and reaches the ventral margin of the valva. This character is probably diagnostic of this new species, though no information on the genitalia of the named species is available from the literature.

There were six named species in the genus: *Idioglossa miraculosa* (Frey & Boll, 1878), *I. bigemma* Walsingham, 1881, *I. triacma* Meyrick, 1913, *I. argodora* Meyrick, 1913, *I. metallochrysa* Turner, 1917, and *I. triumphalis* Meyrick, 1918. In appearance, *I. polliacola* sp. nov. is similar to all of the named species except *triumphalis*, which is aberrant in wing-coloration for the genus. In forewing-coloration, the new species is separated from *miraculosa* by absence of the silvery patch on the apex, and from the other four similar species by presence of the longitudinal metallic streak extending from the base. In hindwing-coloration, the new species is separated from *miraculosa*, *bigemma*, and *argodora* by the area between the second and third metallic fasciae being not whitish but yellowish.

Description. Male (Figs 1, 4, 5, 6, 8, 9, 11–16) and female (Figs 2, 7, 10, 17, 18). Forewing length ♂ 3.7–4.6 mm (holotype 4.4 mm), ♀ 4.0–4.7 mm. Wing expanse ♂ 8.0–9.7 mm

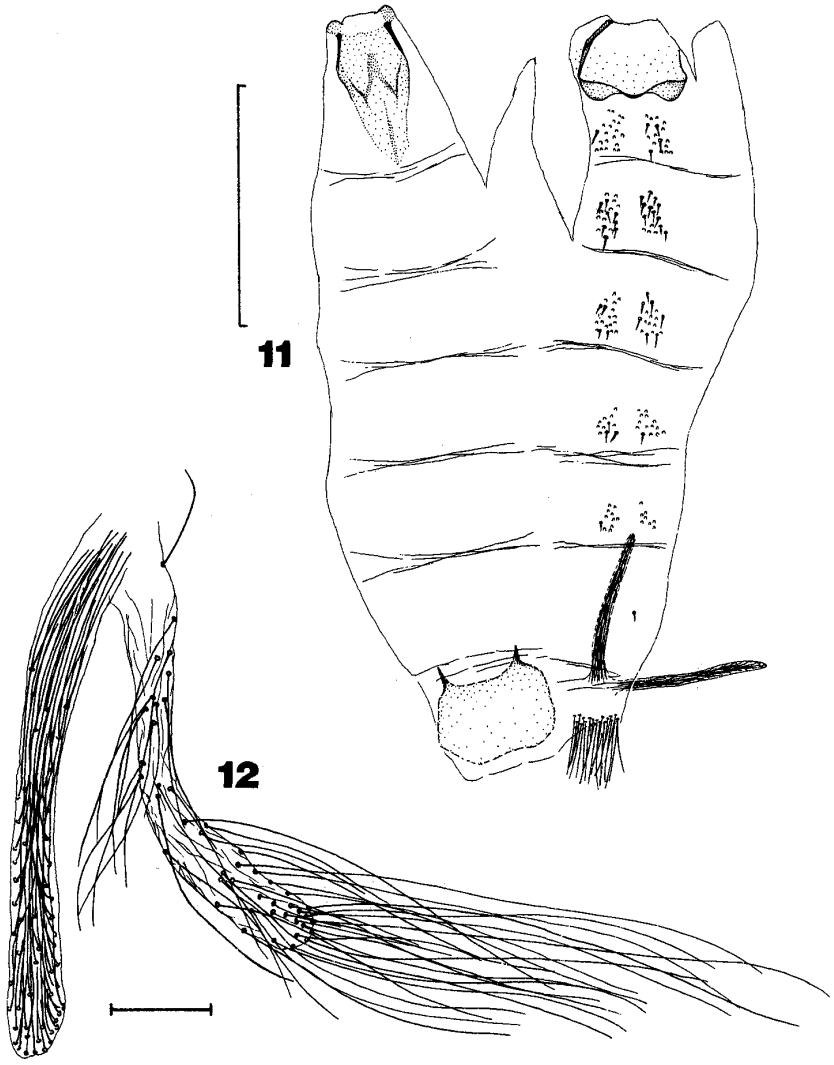


Figs 9–10. Wing-structures of *Idioglossa polliacola* Sugisima, sp. nov., paratypes from Fukiage-gyoen, Tokyo. Scale bar: 1.0 mm. 9. Male wings; curved strong scales on a basal part between Sc and R of forewing omitted (slide no. 0480). 10. Female wings (slide no. 0481).

(holotype 9.3 mm), ♀ 8.5–10.2 mm.

Some characters given below as specific ones, especially structures of head-appendages, wings, and genitalia, may in fact be generic ones, because Sugisima has no firsthand experience on the named *Idioglossa*-species, and because little information is available from the literature concerning such characters.

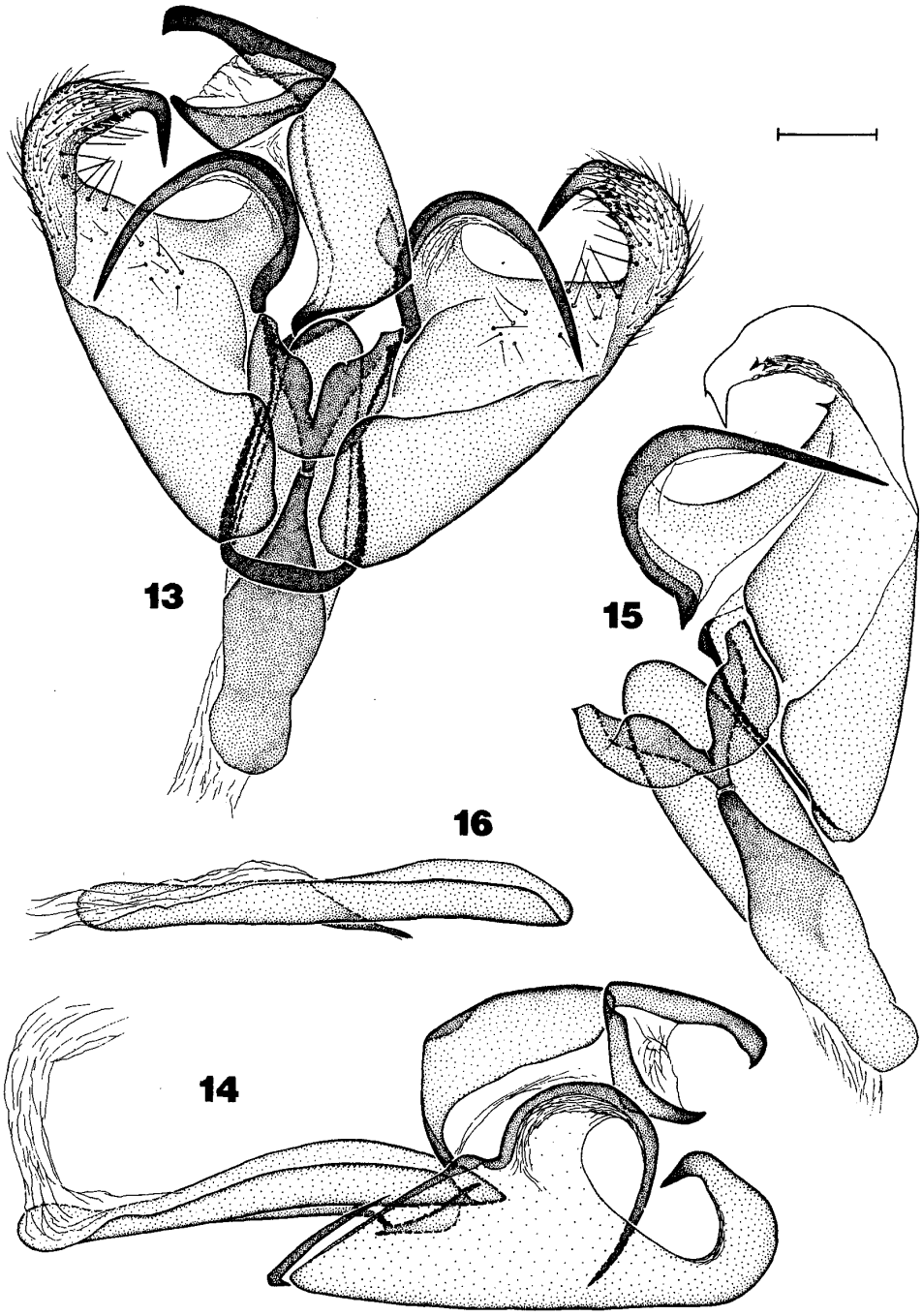
Head and its appendages (Figs 1b, 2b) glossy ivory, tinged with chrome-yellow in scape dorsally and in labial palpi outwards, with brownish annulations above flagellum. Antennae (Figs 4a, 4b, 6, 7) almost as long as forewing; scape without pecten; flagellum in male with short setae scattered sparsely under scales; subconical projection near the base of male antennae resulting from modification of the third segment of flagellum. Proboscis (Figs 4a, 5, 8) well-developed, longer than labial palpus, scaled in basal 3/4, on the basal part above with a conspicuous tuft of elongate scales longer than the height of the head. Maxillary palpi (Fig. 8) four-segmented, parallel to each other or crossing in front of the base of the proboscis, with considerably elongate scales densely scattered in the fourth segment and sparsely in the third one; basal two segments cylindrical, equal in length and twice as long as the almost spherical third one; the fourth segment largest, nearly bullet-shaped. Thorax glossy ivory, tinged with chrome-yellow in cephalic part, in tegulae, and in metathorax, with dorsal chrome-yellowish streaks running longitudinally on mesothorax. Legs glossy ivory, tinged with yellow-ochre; foretibia chrome-yellowish, often with a longitudinal brownish streak on the inner side; hindtibia above with long and robust needle-like bristles. Abdo-



Figs 11–12. Male abdomen of *Idioglossa polliacola* Sugisima, sp. nov., paratypes from Fukiage-gyoen, Tokyo. 11. The whole abdomen torn laterally; tergites to the right (slide no. 0437). Scale bar: 1.0 mm. 12. Magnified view of paired pouches of the intersegmental membrane between the seventh and eighth tergites, with an end reversed (slide no. 0435). Scale bar: 0.1 mm.

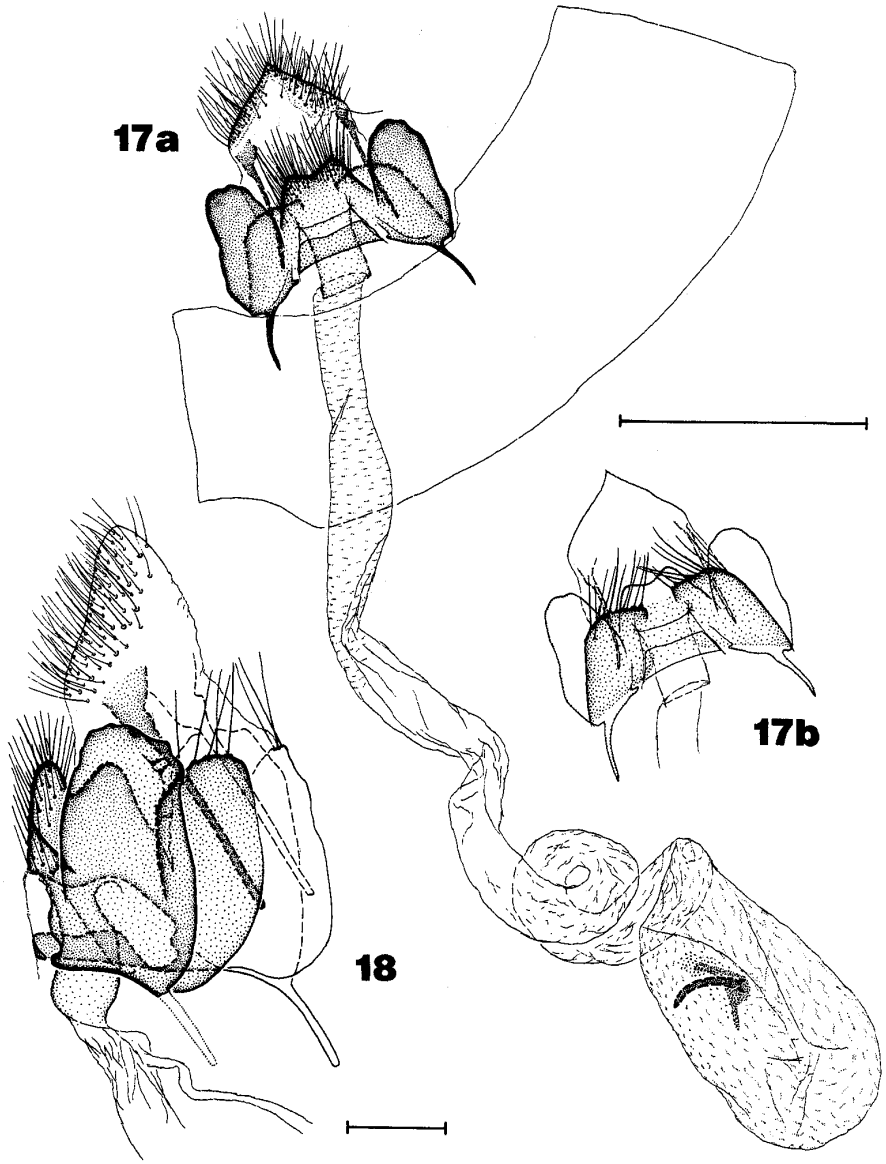
men (Figs 4c, 11) chrome-yellowish above, glossy ivory below, with each tergite edged with glossy ivory scales; the eighth tergite cephalically edged with dark brownish to a varying extent (generally much more distinctly in female than in male); venulae and apodemes little developed in the second sternite; a pair of patches of spine-like scales present under normal scales on the second to sixth or seventh tergites.

Forewing and its cilia chrome-yellowish, sparsely mottled with dark brown-tipped scales, with a series of much longer spatulate dark grey-brownish scales extending caudally from the dorsal margin around basal 1/3; a longitudinal silvery streak extending from the base to basal 1/5 almost along the wing-axis, often somewhat tinged with dark brown-purple-grey; a shiny dark brown-purple-greyish fascia present around basal 1/3, bent outwards, usually adjacent to the costal margin, often weakened in the dorsal part, and ornamented with silvery scales to a varying extent; the other shiny dark brown-purple-greyish fascia present beyond



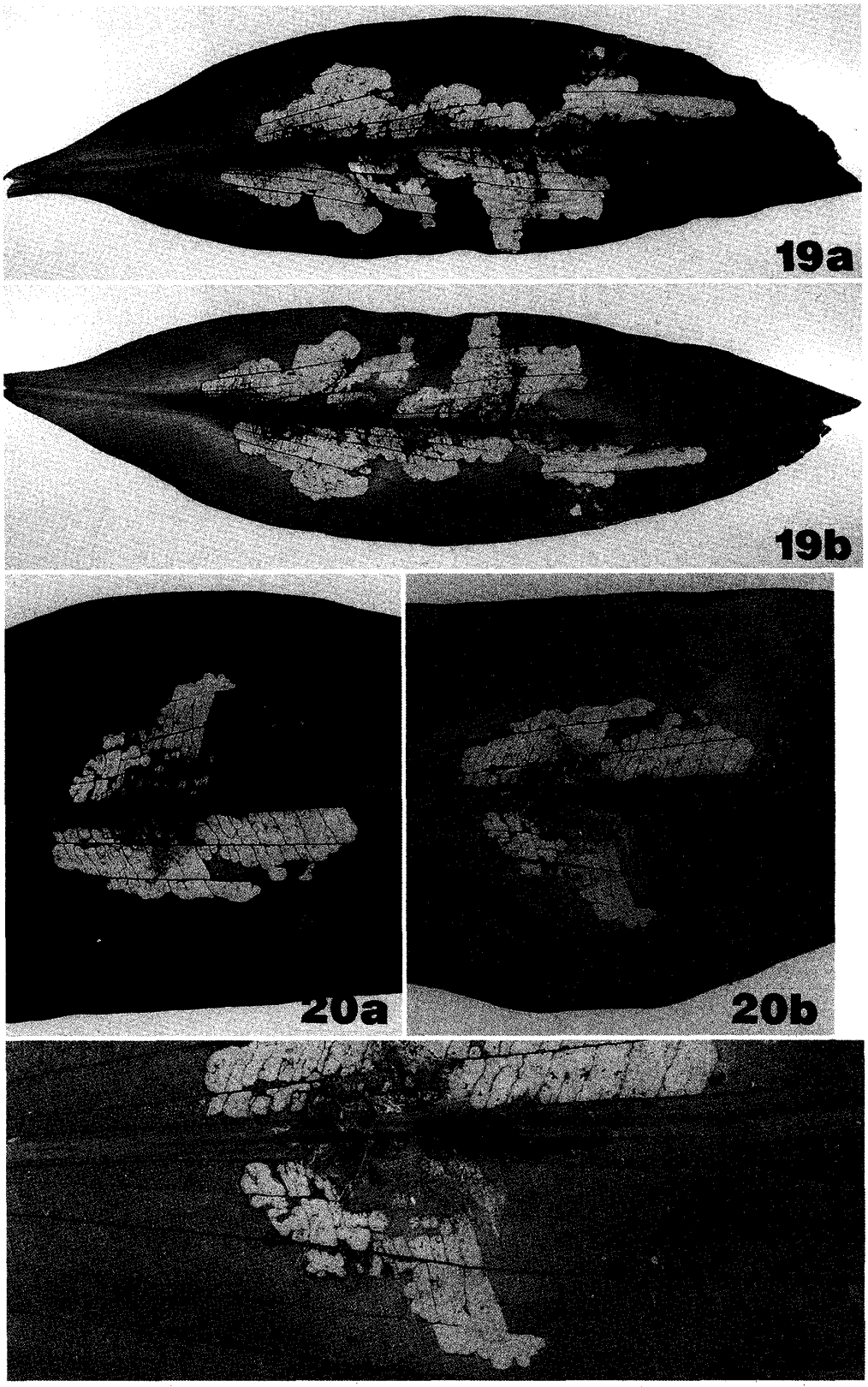
Figs 13–16. Male genitalia of *Idioglossa polliacola* Sugisima, sp. nov. Scale bar: 0.1 mm. 13. Caudal view, with valvae expanded (holotype; slide no. 0488). 14. Lateral view (paratype from Fukiage-gyoen, Tokyo; slide no. 0435). 15. Articulation between aedeagus, juxta, and right valva; valva torn between the costal area and the other parts; caudal view (paratype from Fukiage-gyoen, Tokyo; slide no. 0486). 16. Aedeagus in lateral view (paratype from Fukiage-gyoen, Tokyo; slide no. 0439).

basal 3/4, almost straight, traversing outwards obliquely throughout the wing, edged inwards with silvery scales to a varying extent, with each end extending into cilia as a dark grey-brownish band; a silvery spot present midway between the two shiny dark brown-purple-greyish fasciae, varying in size and shape, and never reaching costal margin. Hindwing and

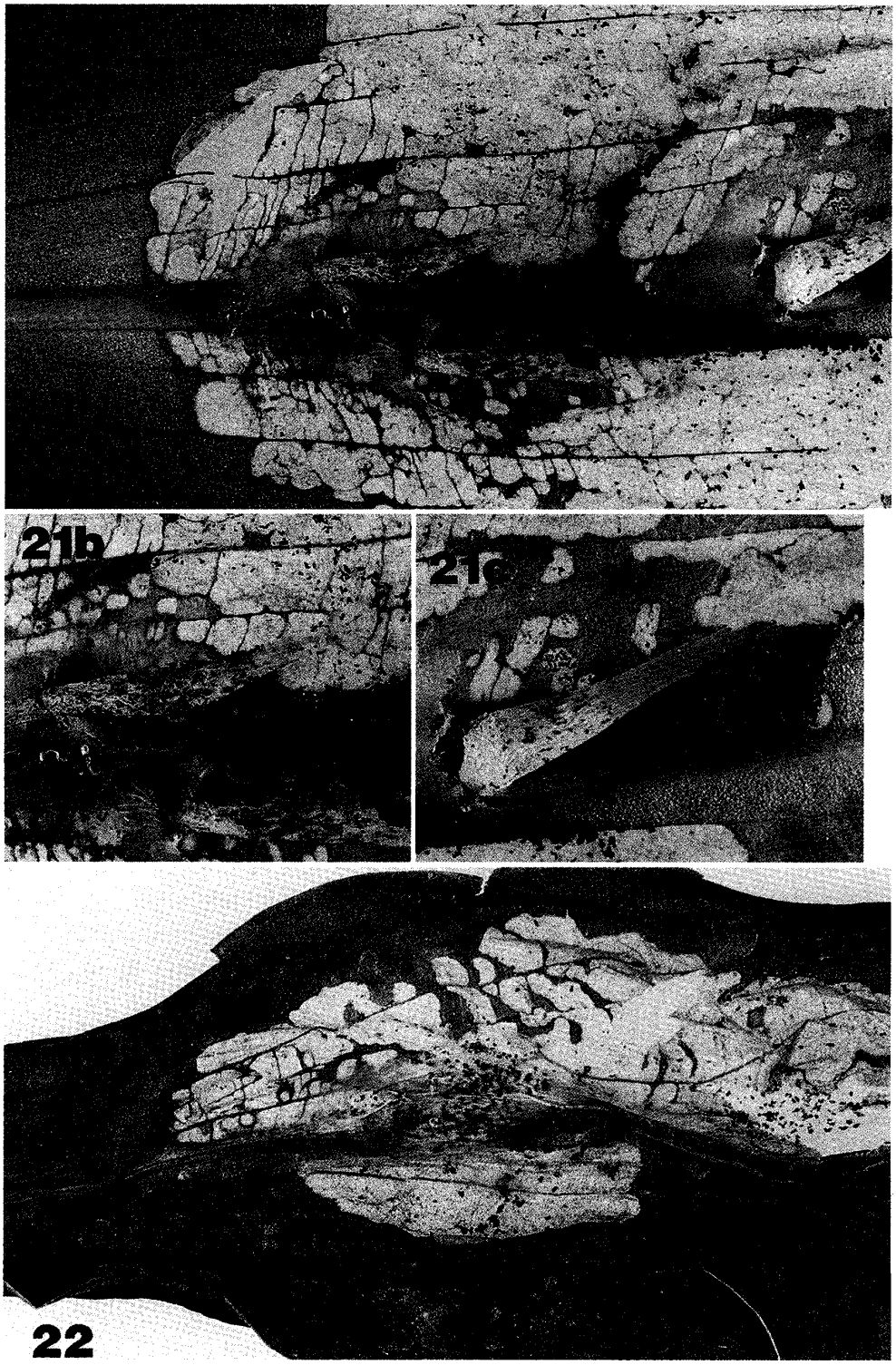


Figs 17–18. Female genitalia of *Idioglossa polliacola* Sugisima, sp. nov., paratypes from Fukiage-gyoen, Tokyo. 17. Ventral view, with the seventh abdominal segment torn laterally and opened to the right (slide no. 0489) (a: the whole genitalia, b: caudal parts with the eighth tergite emphasized). Scale bar: 0.5 mm. 18. Lateral view of caudal parts, with the dorsal side to the right (slide no. 0491). Scale bar 0.1 mm.

its cilia chrome-yellowish, with a small series of much longer linear dark grey-brownish scales extending caudally from the dorsal margin around basal 1/4, and with four silvery fasciae traversing throughout wing on basal 1/4, before basal 2/5, beyond basal 3/5, and beyond basal 4/5; all these silvery fasciae edged outwards with shiny dark brown-purple-greyish scales, except for the second one edged inwards with such scales; the most apical silvery fascia widest, most heavily margined with dark brown-purple-greyish scales, with each end extending into cilia as a dark grey-brownish band; the wing considerably lighter-coloured between the base and the first fascia and slightly between the second and third fasciae; a few dark brownish scales present at wing-tip.



Figs 19–20. Larval feeding of *Idioglossa polliacola* Sugisima, sp. nov.; Fukiage-gyoen, Tokyo. 19. Food-leaf heavily damaged by seven larvae (a: upperside of the leaf, b: underside). 20. Larval nests (a: upperside of the leaf, b: underside, c: magnified view of the lower half of the underside).



Figs 21–22. Cocoons and the hibernation room of *Idioglossa polliacola* Sugisima, sp. nov. 21. Cocoons collected in Sanaru-ko, Hamamatu City (00333) (a: underside of the leaf, with two finished cocoons around the centre and a cocoon under construction at the right end, b: magnified view of the finished cocoon, c: magnified view of the cocoon under construction. 22. Hibernation room collected from Fukiage-gyoen, Tokyo.

Wing structures (Figs 9, 10). Forewing with R_5 stalked with R_4 and reaching costal margin; M_1 stalked with the common stem of R_{4+5}; one of M-veins absent; basal fork of 1A+2A very short and indistinct; cell nearly open. Hindwing with Rs reaching termen; one of M-veins absent; cell open. Female frenulum composed of two acanthi. Retinaculum represented by two rows of apically curved linear long scales along Sc and along R in female, represented by a hook arising from Sc and a series of curved linear long finer scales between Sc and R in male. In both sexes, costal margin of hindwing convex in the basal part, from which a group of much longer robust straight scales extend towards forewing; a group of similar but shorter scales present beneath a basal part of forewing almost along the dorsal margin.

Male genitalia and associated structures (Figs 4d, 12–16). Intersegmental membrane between the seventh and eighth tergites invaginated and forming a pair of elongate pouches, which are slightly longer than the seventh tergite, inside ornamented with many long hairs, and likely to serve as a scent bag for mating. The eighth sternite sclerotized more strongly than the others, latero-cephalically with a pair of short apophyses. Uncus and gnathos articulated with tegumen, forming beak-like structure together with each other; in lateral view, dorsal margin of uncus smoothly ending towards the pointed apex. Tegumen strongly sclerotized and thickened around lateral ends along the cephalic margin, articulated with dorso-cephalic angle of valva; a short medial ridge present on the cephalic part; in lateral view, dorsal margin slightly bent around middle, dorso-cephalic angle being about 110°, and cephalic margin almost straight. Valva triangular, tapering towards strongly up-curved apical part, which is ornamented with stout bristles inwards and ends as a bald cone; a down-curved sickle-blade-shaped projection arising from the base of the dorsal margin of the valva, with its pointed apex usually placed in a concavity on the inner surface of the ventro-medial part of the valva. Juxta represented by a symmetric sclerotized plate, deeply cleft dorsally, with each end being shaped like a human stomach. Vinculum very narrow, U-shaped, ventro-medially somewhat thickened, with its dorsal ends distant from tegumen. Aedeagus slightly longer than valva, dorsally membranous; a sclerotized arm arising from the ventral surface of the aedeagus, extending caudally, and strongly articulated with juxta at the apex; cornuti absent.

Female genitalia (Figs 17, 18). Papillae anales short, semi-conical, ornamented dorsally and laterally with dense setae and bristles. Apophyses anteriores 1/2 as long as the apophyses posteriores. A pair of strongly sclerotized sub-quadrangular shields covering lateral and ventro-lateral sides of the eighth segment, arising from a cephalic part of the segment, and extending caudally beyond the caudal margin of the segment. The eighth tergite with a pair of strongly sclerotized parts slightly protruding over the ninth tergite and ornamented with several very long and robust bristles along the caudal margin. Caudal part of the eighth sternite strongly sclerotized, bi-lobed, protruding over the ninth sternite, and ornamented densely with robust bristles; cephalic part of the eighth sternite somewhat membranous, with a trapezoidal medial sclerotized part. Ostium situated on a central part of the eighth sternite; antrum cylindrical, nearly as long as apophyses anteriores, weakly sclerotized, and nearly membranous around the ostium; ductus bursae coiled nearly two times just before corpus bursae; ductus seminalis branching from ductus bursae near antrum. Corpus bursae oval; signum represented by a crescent-shaped sclerotized patch, with minute teeth and a very large curved thorn.

Distribution. Japan (Honshu).

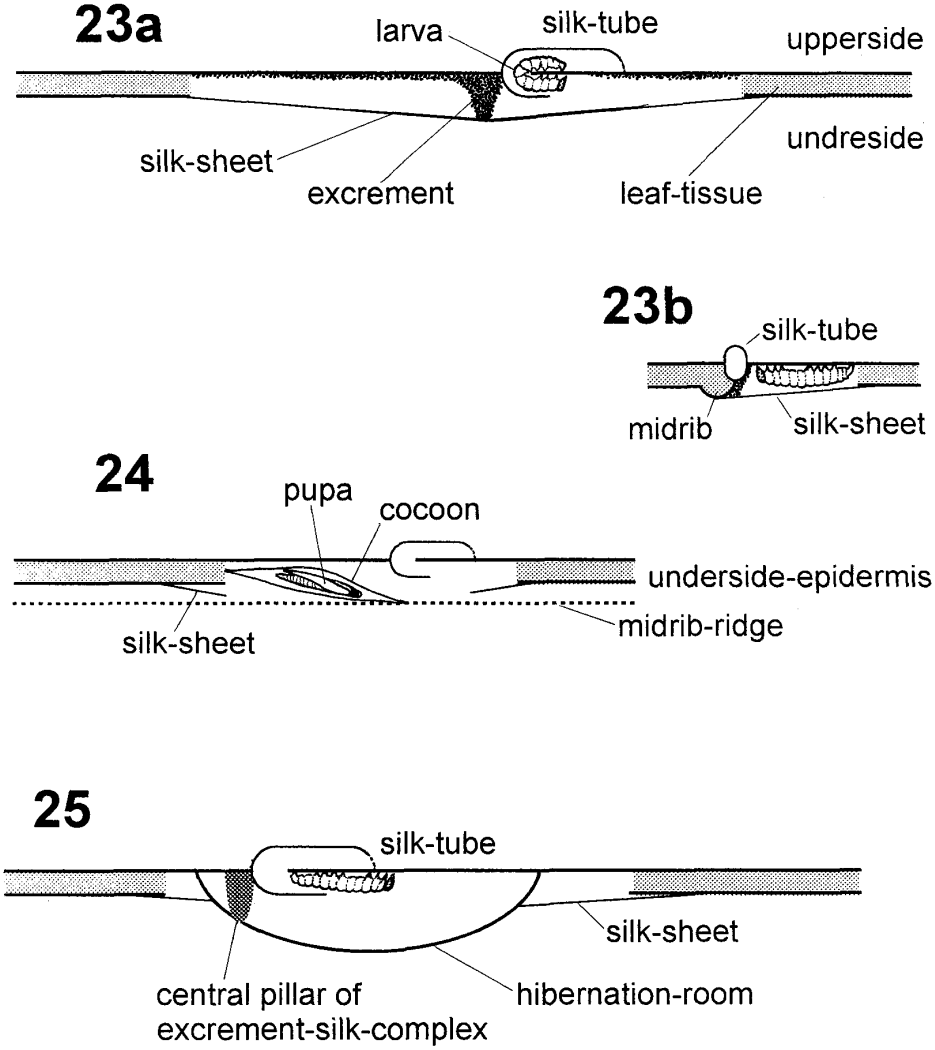
Food-plant. *Pollia japonica* Thunb. (Commelinaceae). The larva of *Idioglossa polliacola*

apparently feeds exclusively on the leaf of this plant.

Biology (Figs 3, 19–25). In central Honshu, *Idioglossa polliacola* sp. nov. is rather common in shady moist forests, where the food-plant almost always flourishes. Presence of the new species is usually recognized from the food-leaf being heavily damaged by feeding of the larva, which lives hiding in a characteristic and complex nest (Figs 19, 20, 23). Description below is based on observation by Arita in Fukiage-gyoen, Imperial Palace, Tokyo and that by Sugisima in Sanaru-ko, Hamamatu City, Sizuoka Pref. In these localities, the species has at least two generations a year and generations maybe somewhat overlap, because the adult moth flies in early summer and again from mid summer until early autumn, and because larval feeding is continuously observed from early summer until late autumn.

The egg is laid singly on the underside of the food-leaf along the midrib. The hatched larva, after moving along the midrib for a while, makes a silk-sheet between the midrib-ridge and the underside-surface, and hides under the sheet. In addition, the larva bores a hole through the midrib or adjacent area of the leaf and makes a relatively thick silk-tube through the hole. The tube above the leaf looks like a sleeping bag attached to the leaf-surface, and extends towards the opposite side of the leaf through the hole as a short tunnel opening under the silk-sheet. The hatched larva sometimes bores into the midrib, and in this case, the silk-tube does not appear above the leaf. The larva feeds on the food-leaf from the underside hiding under the silk-sheet, stripping leaf-tissue away, and leaving only the upperside-epidermis uneaten. It usually rests in the tube around the hole, with the head directed towards the underside of the leaf. When the larva is disturbed from either side of the leaf, it escapes to the opposite side through the tube. As the larva grows, the sheet and tube become broader and thicker. The sheet over the opening of the tube is usually too thick to observe the larval actions through it. Excrement is clustered under the sheet almost along the midrib, especially densely around the exit of the tube; excrement lumped around the midrib contributes to maintain space between the sheet and leaf-surface sufficient for the grown larva to crawl easily. Larval ecdysis takes place apparently under the sheet, though the exuviae are deposited outside the sheet. The larva sometimes makes more than one nest. It is highly usual in the field that more than one, and up to 20 larvae co-occur on a single leaf, and in this case, excrement is lumped along the edge of the nests as well as along the midrib. In rearing conditions, usurpation of the nest is sometimes tried but rarely successful: the lawful nest-owner warns the invader against entering by bumping the head against the silk-sheet and the leaf-surface or by struggling very rapidly, and the invader does the same. Before pupation, the mature larva makes a somewhat tube-like cocoon on the underside of the leaf, cutting the silk-sheet, and thus the cocoon is fully exposed and looks like a hammock attached to the midrib-ridge by one end and to leaf-surface by the other end (Figs 21 & 24). The adult moth emerges nearly two weeks after pupation, and is often found in the field resting on the underside of the food-leaf.

In autumn, probably in response to the shortened day-period, the larva adjusts itself to hibernation. After feeding in the same way as the larva of the non-hibernating generation, the mature larva of the hibernating generation makes the silk-sheet much thicker to remodel the nest into a narrower dome-like hibernation-room, which is peculiar to this generation (Figs 22 & 25). The hibernation-room is completely opaque, and inside has a central pillar of excrement-silk-complex arising from the leaf-surface near the opening of the silk-tube. The larva apparently maintains its own caudal part in the tube during hibernation. Pupation of this generation has been incompletely observed, but the larva apparently pupates after hibernation in the very late spring without leaving the hibernation-room. In the field,



Figs 23–25. Sectional plans of the larval nest, the cocoon, and the hibernation-room of *Idioglossa polliacola* Sugisima, sp. nov. 23. The larval nest (a: the sectional plan along the longitudinal axis of the leaf nearly along the midrib, with the larva resting, b: that along the lateral axis of the leaf across the hole, with the larva feeding). 24. The cocoon, along the longitudinal axis of the leaf nearly along the midrib. 25. The hibernation-room, along the longitudinal axis of the leaf, with the larva hibernating.

the adult moth of this generation occurs in the early summer.

The adult moth in the light rests in a peculiar attitude, which is exceptional for Microlepidoptera (Fig. 3). The wings are semi-expanded, with the angle between the forewings at 90–110°, and with the angle between the hindwings at 30–45°. This leaves the hindwings almost entirely exposed, so that the darker transverse markings of the wings and their extensions on the cilia form a W-shaped dark brownish pattern. The head is raised with the basal tuft of the proboscis kept nearly straight, the forelegs are exposed in front, and the antennae are extended backwards above the hindwing-cilia. It is not uncommon for the adult moth to keep still for a day. In contrast, in the dark, the moth moves around actively with the forewings kept folded over the hindwings, with the angle between the forewings at about 30°.

Remarks on the larval nest. One of the most impressive features concerning biology of

Idioglossa polliacola sp. nov. is the larval nest constructed on the leaf of the food-plant. The nest consists of a hole through the midrib or adjacent area, a silk-tube through the hole, and a silk-sheet beneath the leaf. Among the named *Idioglossa*-species, besides the newly described one, larval feeding is well reported on two species. The larva of *I. triacma* feeds on the food-leaf from the underside hiding in the nest with almost the same structures as that of the new species (Fletcher, 1920). Larval feeding of *I. miraculosa* is highly similar to that of the new species and *I. triacma*, but the silk-sheet is not reported in *I. miraculosa* (*cf.* Frey & Boll, 1878; Forbes, 1923). Therefore, the larval nest with a hole through the leaf and a silk-tube through the hole would be one of the generic characters of *Idioglossa*, while it is uncertain whether the silk-sheet beneath the leaf is generic or not.

Larval nests superficially similar to those of the *Idioglossa*-members are known in some other microlepidopterous taxa. The larva of *Epimarptis philocoma* Meyrick feeds on the food-leaf hiding in webs above and below the midrib of the leaf, and webs on either side of the leaf are supported by excrement-pillars and connected by holes through the leaf (Meyrick, 1914). This species is the only member of a batrachedrid subfamily Epimarptinae and might be phylogenetically fairly closely related to the genus *Idioglossa*, which is most likely to belong to the other batrachedrid subfamily Batrachedrinae. Within the gelechioid families other than Batrachedridae, an unidentified species of the genus *Stathmopoda* constructs such a larval nest on the frond of ferns: the larva, feeding on the spores beneath the frond, bores a hole through the frond, above which a barrel-shaped silk-tube coated with excrement stands upright, and below which several branchy silk-galleries extend hiding the feeding larva (Sugisima, *unpublished*). The genus *Stathmopoda* is assigned to an oecophorid subfamily Stathmopodinae (Hodges, 1999). Such larval nests are known not only in Gelechioidea but also in very remote superfamilies. The larva of *Litobrenthia japonica* (Issiki), referred to a choreutoid family Choreutidae, feeds on the leaf of a few fagaceous *Quercus*-species from the underside hiding in the nest, which consists of a hole through the leaf near the diverging point of the veins, a plate of silk-excrement-complex placed upright through the hole, and a silk-sheet beneath the leaf supported by the plate (Kuroko, 1960; Arita, 1987). Another choreutid species, *Brenthia pileae* Arita, feeds on the leaf of urticaceous *Pilea petiolaris pseudopetiolaris* in the same way (Arita, 1987). In these choreutid species, the larval nest is superficially quite similar to that of *I. polliacola* sp. nov., but the silk-tube through the hole is little developed and excrement is scattered on the silk-sheet outside the nest. A tortricoid tortricid species, *Pseudacroclita hapalaspis* (Meyrick), feeds on the leaf of some rosaceous *Rubus*-species from the upperside instead of from the underside, hiding in the nest with a hole, a silk-excrement-tube obliquely lying through the hole, and a silk-sheet covering the feeding larva.

All those taxa given above as examples share with the *Idioglossa*-members the larval nest with holes, through which the larva can reach both sides of the leaf without getting out of the nest. There is no doubt that such a larval nest has been developed more than once. This must suggest that such holes in larval nests have great significance for larval survival. Microlepidopterous larva generally lives in some concealments that hide the larva itself: *e. g.* mines running in the food-material, portable cases of silk-excrement-complex, leaves rolled or tied with silk, silk-sheets or silk-webs covering the feeding larva. However, once an enemy enters the nest, it risks becoming the grave of the larva because of the absence of alternative escapes. In this case, especially when the enemy is a predatory arthropod, the larval nest with the holes, through which the larva can reach both sides of the leaf, must have a great advantage in larval escape from predation over nests without such holes, because there seem to be few enemies that can attack simultaneously from both sides of the leaf.

Specimens examined. Holotype. ♂, Fukiage-gyoen, Imperial Palace, Tokyo, Japan, em. 20. vii. 1998, *ex Pollia japonica*, Y. Arita & M. Ikeda leg., genitalia slide no. 0488 (K. Sugisima, 1999), deposited in NSMT.

Paratypes. [Honshu]: 31 ♂ 36 ♀ (2 ♂ are golden-coated for SEM-observation, and whole insects of 2 ♂ 2 ♀ are mounted on slide), the same locality as the holotype, em. 16–22. vii. 1998, *ex Pollia japonica*, Y. Arita & M. Ikeda leg., deposited in NSMT; 2 ♂ 6 ♀, *ditto*, col. 14–15. x. 1998, em. 27. xi–10. xii. 1998, *ex Pollia japonica*, Y. Arita & K. Sugisima leg., deposited in NSMT; 6 ♂ 1 ♀, Oguni-zinzya, Mori Town, Sizuoka Pref., em. 16, vi, 1999, K. Sugisima leg., deposited in SEHU, BMNH, and ANIC; 17 ♂ 4 ♀, Sanaru-ko, Hamamatu City, Sizuoka Pref., 13–15. vi. 1999, K. Sugisima leg., deposited in NSMT, SEHU, OPU, BMNH, and ANIC; 4 ♂ 5 ♀, *ditto*, col. 8. vii. 1999, em. 24–30. vii. 1999, *ex Pollia japonica* (00333), K. Sugisima leg., deposited in SEHU, OPU, BMNH, and ANIC; 2 ♀, *ditto*, col. 15. vii. 1999, em. 2. viii. 1999, *ex Pollia japonica* (00336), K. Sugisima leg., deposited in SEHU, BMNH; 1 ♂ 1 ♀, Kosido-tyo, Toyoda City, Aiti Pref., col. 19. x. 1998, em. 4–12. xii. 1998, *ex Pollia japonica* (00314), Y. Arita, M. Owada, & K. Sugisima leg., deposited in NSMT; 1 ♂, Taizi Town, Wakayama Pref., 26. v. 1964, T. Kumata leg., deposited in SEHU.

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摘　　要

キバガ上科小蛾の一属スゴモリキバガ属の日本からの新種 (鱗翅目，ホソキバガ科 (新称)，ホソキバガ亜科 (新称)) (杉島一広・有田豊)

ヤブミョウガを幼虫期の食草とする美麗なキバガ上科小蛾の一種が中部日本に産することはかなり以前から知られていた．例えば著者の一人である有田は1960年代末期に京都府の鞍馬山で本種の幼虫を採集し，飼育して成虫を得ている．しかし，形態的特徴が従来日本から知られていたキバガ上科高次分類群のいずれにも合致しなかったため，本種は科の所属すら不明のまま今日まで放置されてきた．有田は1999年夏に皇居吹上御苑で本種の幼虫を採集し，それらを飼育して得られた成虫標本は大阪府立大学の上田達也博士を経由して著者の一人である杉島に転送された．標本を検討した後，杉島は本種がスゴモリキバガ属 (新称)，*Idioglossa* の未記載種であると判断した．著者両名は本種の生活史を協同で詳細に観察した．この論文では，杉島が本種をヤブミョウガスゴモリキバガ (新称)，*Idioglossa polliacola* sp. nov. と命名し，その成虫形態を記載した．また，両著者は本種の生活史を詳細に記載した．本種の生活史において最も印象的な特徴は幼虫がヤブミョウガの葉に作る独特かつ複雑な巣であり，その構造の適応的な意義に関する所見を記した．

スゴモリキバガ属は金属光沢のある横帯を持つ細長い後翅，♂触角基部付近下面の亜円錐形突起，そして何よりも口吻基部付近より生じる極端に伸張した鱗片束によって特徴づけられる．本属は従来ニセマイコガ類として扱われてきたが，最新の分類体系に従えばこれまで日本に産しないとされていたホソキバガ科，Batrachedridae のホソキバガ亜科，Batrachedrinae に置くのが最も適切なようである．なお，ヤブミョウガスゴモリキバガ，スゴモリキバガ属，ホソキバガ亜科，ホソキバガ科は全て新称である．

Idioglossa polliacola Sugisima, sp. nov. ヤブミョウガスゴモリキバガ (Figs 1-25)

本種の前後翅はともに光沢のある山吹色で金属光沢のある灰色の模様に彩られる．前翅の模様は翅の長軸上を基部から 1/5 まで走る縞，1/3 付近にある「く」の字型のやや暗色な横帯と 3/4 強を斜めに横切るやや暗色な帯，そしてこれら 2 本の帯の中央にある紋であり，後翅の模様は 1/4, 2/5, 3/5, 4/5 付近を横切る帯で，第 4 番目が最も太い．後翅の基部と第 1 番目の横帯の間，及び第 2 と 3 番目の横帯の間は淡色になる．軀は光沢のある淡黄色である．♂ 交尾器においては，把握器基部背面より生じる湾曲した鎌刃状の突起が特徴的であり，この突起の先端は把握器腹面の縁にまで至る．

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